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Hart District Replacement Local Plan
Site 1038: Grove Farm, Fleet
Agricultural Land Classification
ALC Report and Map
February 1997

Resource Planning Team
Guildford Statutory Group
ADAS Reading

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AGRICULTURAL LAND CLASSIFICATION REPORT

HART DISTRICT REPLACEMENT LOCAL PLAN
SITE 1038: GROVE FARM, FLEET.

Introduction

1. This report presents the findings of a detailed Agricultural Land Classification (ALC) survey of approximately 19 hectares of land at Grove Farm to the immediate west of Fleet, in the Hart District of Hampshire. The survey was carried out during February 1997.

2. The work was commissioned by the Ministry of Agriculture, Fisheries and Food (MAFF) from its Land Use Planning Unit in Reading, in connection with MAFF's statutory input to the Hart District Replacement Local Plan. The land was surveyed in 1981 (ADAS Ref: 1506/016/81) prior to MAFF's revision of its ALC guidelines in 1988. The current survey therefore supersedes the previous ALC survey.

3. The current work was conducted by members of the Resource Planning Team in the Guildford Statutory Group of ADAS. The land has been graded in accordance with the published MAFF ALC guidelines and criteria (MAFF, 1988). A description of the ALC grades and subgrades is given in Appendix I.

4. At the time of survey, most of the agricultural land on this site was in cereal cropping, with a small triangular area towards the south-east in overgrown grassland. The areas shown as 'Other Land' comprise woodland and an area being used as public open space.

Summary

5. The findings of the survey are shown on the enclosed ALC map. The map has been drawn at a scale of 1:10,000. It is accurate at this scale, but any enlargement would be misleading.

6. The area and proportions of the ALC grades and subgrades on the surveyed land are summarised in Table 1 below.

Table 1: Area of grades and other land

Grade/Other land	Area (hectares)	% Total site area	% Surveyed Area
2	16.8	88.0	90.8
3a	1.7	8.9	9.2
Other land	0.6	3.1	
Total surveyed area	18.5	-	100.0
Total site area	19.1	100.0	-

7. The fieldwork was conducted at an average density of 1 boring per hectare. A total of 20 borings and 2 soil pits were described.

8. The agricultural land on this site comprises mainly Grade 2 land (very good quality) with some Subgrade 3a (good quality) land in the south-east. Land which has been assigned to Grade 2 comprises deep, well drained, sandy soils. These are restricted in their agricultural use to a minor extent by very slight topsoil texture and/or soil droughtiness limitations. Many of the topsoils are extremely light in texture, being loamy fine sands, or very occasionally, fine sandy loams. Where loamy fine sand topsoils occur, this in itself causes land to be limited to a maximum of Grade 2. In addition, the interaction between these freely draining, sandy soils, and the prevailing climate causes profile available water to be slightly restricted, such that Grade 2 is appropriate on the basis of minor soil droughtiness. Yield potential may be slightly affected as a result.

9. Subgrade 3a land has been mapped where soil wetness is the overriding limitation. Soil drainage is restricted by clayey horizons across this area; along with a fluctuating watertable. This is supported by evidence of surface ponding in places. The versatility of this land will be affected by restricting the number of days when the land is in a suitable condition for cultivation and/or grazing by livestock. Soil wetness may also adversely affect crop establishment and development.

Factors Influencing ALC Grade

Climate

10. Climate affects the grading of land through the assessment of an overall climatic limitation and also through interactions with soil characteristics.

11. The key climatic variables used for grading this site are given in Table 2 and were obtained from the published 5km grid datasets using the standard interpolation procedures (Met. Office, 1989).

Table 2: Climatic and altitude data

Factor	Units	Values	
Grid reference	N/A	SU 794 534	SU 795 533
Altitude	m, AOD	68	79
Accumulated Temperature	day°C (Jan-June)	1452	1440
Average Annual Rainfall	mm	681	687
Field Capacity Days	days	146	147
Moisture Deficit, Wheat	mm	109	108
Moisture Deficit, Potatoes	mm	103	101

12. The climatic criteria are considered first when classifying land as climate can be overriding in the sense that severe limitations will restrict land to low grades irrespective of favourable site or soil conditions.

14. The combination of rainfall and temperature at this site mean that there is no overall climatic limitation (Climatic Grade 1). However, climatic factors do interact with soil properties to influence soil wetness and droughtiness.

15. Local climatic factors such as frost risk and exposure are not thought to adversely affect agricultural land use on this site.

Site

16. The land on this site ranges from approximately 66m AOD along the western boundary to 79m AOD in the central north. The land slopes gently in all directions from the highest point, with slopes ranging from 2-5°. Gradient and micro-relief do not affect agricultural land quality across the site.

17. Flooding does not appear to be limiting on this site.

18. Across localised parts of the site, notably along the far northern boundary and across the centre of the site adjacent to the fenceline running approximately east-west, there was some evidence of slight soil erosion. The light topsoil textures have allowed a small extent of water erosion to occur, with small scale rills developing mid-slope and the resultant material being deposited on the colluvial footslopes. However, the extent of this phenomenon was not thought to be sufficient to cause the land utilisation, and therefore the ALC grade, to be affected.

Geology and soils

19. The published geological information for the site (BGS, 1981) shows most of it to be underlain by solid deposits of Tertiary Bracklesham Beds which are interbedded sands, clays and loams. The eastern edge of the site and the south-east corner are mapped as drift deposits of alluvium.

20. The most recently published soils information for this area (SSEW, 1983) maps the Burlesdon soil association across the site. These are described as 'Deep, fine loamy soils with slowly permeable subsoils and slight seasonal waterlogging, associated with deep coarse loamy soils variably affected by groundwater', (SSEW, 1984).

21. Detailed field examination of the soils on the site found that the soils towards the south of the site, broadly corresponding with the land mapped as Subgrade 3a, are similar to those described by the Soil Survey as Burlesdon association. However, soils across the remainder of the site are somewhat different to those described above, being generally deep, sandy and well drained with some evidence of a fluctuating watertable.

Agricultural Land Classification

22. The details of the classification of the site are shown on the attached ALC map and the area statistics of each grade are given in Table 1, page 1.

23. The location of the auger borings and pits is shown on the attached sample location map and the details of the soils data are presented in Appendix III.

Grade 2

24. Very good quality agricultural land has been mapped across the majority of the site. The land is only restricted to a minor extent and a wide range of crops producing a generally high level of yield would be expected, assuming a good standard of management.

25. Soil profiles were found to comprise non-calcareous, loamy fine sand, or very occasionally, fine sandy loam topsoils. These may contain up to 2% total flints by volume. Upper subsoils comprise similar textures and are similarly stony, although lower subsoil horizons were found to be variable, some passing to fine sand, and others passing to slightly heavier textures of sandy clay loam or clay. Relatively abrupt texture changes were not uncommon and are typical of the interbedded horizons associated with Bracklesham Beds. Many of the profiles exhibited evidence of slight soil wetness, being gleyed from variable depths below the topsoil (between 30 and 93cm). Such characteristics principally arise from a fluctuating watertable, rather than slowly permeable horizons, although some profiles do contain slowly permeable clay horizons at depth, (i.e., below 70cm). These soils are assigned to wetness class I or II, which equates to an ALC grade of 1 on soil wetness, because of the light topsoil textures. Soil pit 1 (see Appendix III) is representative of the soils described within the Grade 2 unit.

26. The land assigned to Grade 2 is limited to a minor extent as a result of the light topsoil textures (a topsoil texture limitation) and/or soil droughtiness. Where loamy fine sand topsoils occur, the land is likely to be easily worked, but topsoils may be prone to surface capping and slaking, thereby forming compacted layers if cultivated or traversed when wet. As a result land is not eligible for Grade 1. In addition, the combination of these sandy soils and the prevailing climatic conditions results in a very slight soil droughtiness restriction. Moisture balance calculations indicate that soil moisture reserves may not be sufficient to meet the demands of a growing crop throughout the year. Consequently, the crop may experience drought stress during the drier parts of the growing season and yield potential may be affected.

27. Occasional profiles of better or worse quality were observed within the Grade 2 unit but these were not mapped separately because of their limited extent and sporadic distribution.

Subgrade 3a

28. Good quality agricultural land has been mapped across a small area of land towards the south of the site. This land is limited by soil wetness restrictions. Profiles comprise non-calcareous topsoils of fine sandy loam which are generally free of stones. These overlie heavier subsoils of sandy clay loam or clay which were gleyed and slowly permeable, (see pit 2, Appendix III), thereby significantly impeding soil drainage. The combination of these drainage characteristics (wetness class IV), the light topsoil textures, and the prevailing climate, gives rise to an ALC grade of 3a. The soil wetness limitation is likely to affect crop growth and development, as well as influencing the number of days when the land is in a suitable condition for cultivation and/or grazing by livestock.

29. Elsewhere within the Subgrade 3a mapping unit, (i.e., within the small triangular field given over to rough grassland), similar but more permeable soils were observed. These are, however, affected by fluctuating groundwater as evidenced by gleying to the surface. At the time of survey (February) the watertable was found to occur at approximately 35cm depth. Due to the low-lying position in the landscape, it is unlikely that the watertable can be adequately controlled across this land. The soils are thereby assessed as wetness class III and the land classified as Subgrade 3a, on the basis of soil wetness.

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ADAS Reading

SOURCES OF REFERENCE

British Geological Survey (1981) *Sheet No.284,* Basingstoke, BGS: London.

Ministry of Agriculture, Fisheries And Food (1988) *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land.* MAFF: London.

Meteorological Office (1989) *Climatological Data for Agricultural Land Classification.* Meteorological Office: Bracknell.

Soil Survey of England and Wales (1983) *Sheet 6, Soils of South East England.* SSEW: Harpenden.

Soil Survey of England and Wales (1984) *Soils and their Use in South East England, Bulletin No. 15* SSEW: Harpenden.

APPENDIX I

DESCRIPTION OF THE GRADES AND SUBGRADES

Grade 1: Excellent Quality Agricultural Land

Land with no or very minor limitations to agricultural use. A very wide range of agricultural and horticultural crops can be grown and commonly includes top fruit, soft fruit, salad crops and winter harvested vegetables. Yields are high and less variable than on land of lower quality.

Grade 2: Very Good Quality Agricultural Land

Land with minor limitations which affect crop yield, cultivations or harvesting. A wide range of agricultural or horticultural crops can usually be grown but on some land of this grade there may be reduced flexibility due to difficulties with the production of the more demanding crops such as winter harvested vegetables and arable root crops. The level of yield is generally high but may be lower or more variable than Grade 1 land.

Grade 3: Good to Moderate Quality Land

Land with moderate limitations which affect the choice of crops, the timing and type of cultivation, harvesting or the level of yield. When more demanding crops are grown, yields are generally lower or more variable than on land in Grades 1 and 2.

Subgrade 3a: Good Quality Agricultural Land

Land capable of consistently producing moderate to high yields of a narrow range of arable crops, especially cereals, or moderate yields of a wide range of crops including cereals, grass, oilseed rape, potatoes, sugar beet and the less demanding horticultural crops.

Subgrade 3b: Moderate Quality Agricultural Land

Land capable of producing moderate yields of a narrow range of crops, principally cereals and grass, or lower yields of a wider range of crops or high yields of grass that can be grazed or harvested over most of the year.

Grade 4: Poor Quality Agricultural Land

Land with severe limitations which significantly restrict the range of crops and/or the level of yields. It is mainly suited to grass with occasional arable crops (e.g. cereals and forage crops) the yields of which are variable. In moist climates, yields of grass may be moderate to high but there may be difficulties in utilisation. The grade also includes very droughty arable land.

Grade 5: Very Poor Quality Agricultural Land

Land with severe limitations that restricts use to permanent pasture or rough grazing, except for occasional pioneer forage crops.

APPENDIX II

SOIL WETNESS CLASSIFICATION

Definitions of Soil Wetness Classes

Soil wetness is classified according to the depth and duration of waterlogging in the soil profile. Six soil wetness classes are identified and are defined in the table below.

Wetness Class	Duration of waterlogging[1]
I	The soil profile is not wet within 70 cm depth for more than 30 days in most years.[2]
II	The soil profile is wet within 70 cm depth for 31-90 days in most years **or**, if there is no slowly permeable layer within 80 cm depth, it is wet within 70 cm for more than 90 days, but only wet within 40 cm depth for 30 days in most years.
III	The soil profile is wet within 70 cm depth for 91-180 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 70 cm for more than 180 days, but only wet within 40 cm depth for between 31-90 days in most years.
IV	The soil profile is wet within 70 cm depth for more than 180 days but not wet within 40 cm depth for more than 210 days in most years **or**, if there is no slowly permeable layer present within 80 cm depth, it is wet within 40 cm depth for 91-210 days in most years.
V	The soil profile is wet within 40 cm depth for 211-335 days in most years.
VI	The soil profile is wet within 40 cm depth for more than 335 days in most years.

Assessment of Wetness Class

Soils have been allocated to wetness classes by the interpretation of soil profile characteristics and climatic factors using the methodology described in *Agricultural Land Classification of England and Wales: Revised guidelines and criteria for grading the quality of agricultural land* (MAFF, 1988).

[1] The number of days is not necessarily a continuous period.
[2] 'In most years' is defined as more than 10 out of 20 years.

APPENDIX III

SOIL DATA

Contents:

SOIL PROFILE DESCRIPTIONS: EXPLANATORY NOTE

Soil pit and auger boring information collected during ALC fieldwork is held on a computer database. This uses notations and abbreviations as set out below.

Boring Header Information

1. **GRID REF**: national 100 km grid square and 8 figure grid reference.

2. **USE**: Land use at the time of survey. The following abbreviations are used.

ARA:	Arable	**WHT:**	Wheat	**BAR**:	Barley
CER:	Cereals	**OAT**:	Oats	**MZE**:	Maize
OSR:	Oilseed rape	**BEN**:	Field Beans	**BRA**:	Brassicae
POT:	Potatoes	**SBT**:	Sugar Beet	**FCD**:	Fodder Crops
LIN:	Linseed	**FRT**:	Soft and Top Fruit	**FLW**:	Fallow
PGR:	Permanent Pasture	**LEY**:	Ley Grass	**RGR**:	Rough Grazing
SCR:		Scrub	**CFW**:	Coniferous Woodland	
DCW: Deciduous Wood					
HTH:	Heathland	**BOG**:	Bog or Marsh	**FLW**:	Fallow
PLO:	Ploughed	**SAS**:	Set aside	**OTH**:	Other
HRT:	*Horticultural Crops*				

3. **GRDNT**: Gradient as estimated or measured by a hand-held optical clinometer.

4. **GLEY/SPL**: Depth in centimetres (cm) to gleying and/or slowly permeable layers.

5. **AP (WHEAT/POTS)**: Crop-adjusted available water capacity.

6. **MB (WHEAT/POTS)**: Moisture Balance. (Crop adjusted AP - crop adjusted MD)

7. **DRT**: Best grade according to soil droughtiness.

8. If any of the following factors are considered significant, 'Y' will be entered in the relevant column.

MREL:	Microrelief limitation	**FLOOD:**	Flood risk	**EROSN**:	Soil erosion risk
EXP:	Exposure limitation	**FROST**:	Frost prone	**DIST**:	Disturbed land
CHEM:	Chemical limitation				

9. **LIMIT**: The main limitation to land quality. The following abbreviations are used.

OC:	Overall Climate	**AE**:	Aspect	**EX**:	Exposure
FR:	Frost Risk	**GR**:	Gradient	**MR**:	Microrelief
FL:	Flood Risk	**TX**:	Topsoil Texture	**DP**:	Soil Depth
CH:	Chemical	**WE**:	Wetness	**WK**:	Workability
DR:	Drought	**ER**:	Erosion Risk	**WD**:	Soil Wetness/Droughtiness
ST:	Topsoil Stoniness				

Soil Pits and Auger Borings

1. **TEXTURE**: soil texture classes are denoted by the following abbreviations.

S:	Sand	**LS**:	Loamy Sand	**SL**:	Sandy Loam
SZL:	Sandy Silt Loam	**CL**:	Clay Loam	**ZCL**:	Silty Clay Loam
ZL:	Silt Loam	**SCL**:	Sandy Clay Loam	**C**:	Clay
SC:	Sandy Clay	**ZC**:	Silty Clay	**OL**:	Organic Loam
P:	Peat	**SP**:	Sandy Peat	**LP**:	Loamy Peat
PL:	Peaty Loam	**PS**:	Peaty Sand	**MZ**:	Marine Light Silts

For the sand, loamy sand, sandy loam and sandy silt loam classes, the predominant size of sand fraction will be indicated by the use of the following prefixes:

F: Fine (more than 66% of the sand less than 0.2mm)
M: Medium (less than 66% fine sand and less than 33% coarse sand)
C: Coarse (more than 33% of the sand larger than 0.6mm)

The clay loam and silty clay loam classes will be sub-divided according to the clay content: **M**: Medium (<27% clay) **H**: Heavy (27-35% clay)

2. **MOTTLE COL**: Mottle colour using Munsell notation.

3. **MOTTLE ABUN**: Mottle abundance, expressed as a percentage of the matrix or surface described.

F: few <2% **C**: common 2-20% **M**: many 20-40% **VM**: very many 40% +

4. **MOTTLE CONT:** Mottle contrast

F: faint - indistinct mottles, evident only on close inspection
D: distinct - mottles are readily seen
P: prominent - mottling is conspicuous and one of the outstanding features of the horizon

5. **PED. COL**: Ped face colour using Munsell notation.

6. **GLEY:** If the soil horizon is gleyed a 'Y' will appear in this column. If slightly gleyed, an 'S' will appear.

7. **STONE LITH**: Stone Lithology - One of the following is used.

HR:	all hard rocks and stones	**SLST**:	soft oolitic or dolomitic limestone
CH:	chalk	**FSST**:	soft, fine grained sandstone
ZR:	soft, argillaceous, or silty rocks	**GH**:	gravel with non-porous (hard) stones
MSST:	soft, medium grained sandstone	**GS**:	gravel with porous (soft) stones
SI:	soft weathered igneous/metamorphic rock		

Stone contents (>2cm, >6cm and total) are given in percentages (by volume).

8.**STRUCT**: the degree of development, size and shape of soil peds are described using the following notation:

degree of development	**WK**: weakly developed **ST**: strongly developed	**MD**: moderately developed
ped size	**F**: fine **C**: coarse	**M**: medium **VC**: very coarse
ped shape	**S** : single grain **GR**: granular **SAB**: sub-angular blocky **PL**: platy	**M**: massive **AB**: angular blocky **PR**: prismatic

9.**CONSIST**: Soil consistence is described using the following notation:

L: loose **VF**: very friable **FR**: friable **FM**: firm **VM**: very firm
EM: extremely firm **EH**: extremely hard

10.**SUBS STR**: Subsoil structural condition recorded for the purpose of calculating profile droughtiness: **G**: good **M**: moderate **P**: poor

11. **POR**: Soil porosity. If a soil horizon has less than 0.5% biopores >0.5 mm, a 'Y' will appear in this column.

12. **IMP**: If the profile is impenetrable to rooting a 'Y' will appear in this column at the appropriate horizon.

13. **SPL**: Slowly permeable layer. If the soil horizon is slowly permeable a 'Y' will appear in this column.

14. **CALC**: If the soil horizon is calcareous, a 'Y' will appear in this column.

15. Other notations
    APW: available water capacity (in mm) adjusted for wheat
    APP: available water capacity (in mm) adjusted for potatoes
    MBW: moisture balance, wheat
    MBP: moisture balance, potatoes

SOIL PIT DESCRIPTION

Site Name : HART LP, GROVE FARM Pit Number : 1P

Grid Reference: SU79705330 Average Annual Rainfall : 687 mm
Accumulated Temperature : 1452 degree days
Field Capacity Level : 147 days
Land Use : Cereals
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 33	LFS	10YR32 00	0	2	HR					
33- 54	LFS	10YR52 00	0	2	HR	C	MVCOAB	FR	G	
54- 62	LFS	10YR62 00	0	2	HR	C	MDCOAB	VF	G	
62-100	FS	10YR62 00	0	2	HR	M	WKCOAB	VF	M	
100-120	C	25Y 72 00	0	0		M			P	

Wetness Grade : 1 Wetness Class : I
Gleying :033 cm
SPL : No SPL

Drought Grade : 2 APW : 157mm MBW : 48 mm
APP : 112mm MBP : 9 mm → Almost Grade 1

FINAL ALC GRADE : 2
MAIN LIMITATION : Droughtiness

SOIL PIT DESCRIPTION

Site Name : HART LP, GROVE FARM Pit Number : 2P

Grid Reference: SU79605300
Average Annual Rainfall : 687 mm
Accumulated Temperature : 1452 degree days
Field Capacity Level : 147 days
Land Use : Cereals
Slope and Aspect : degrees

HORIZON	TEXTURE	COLOUR	STONES >2	TOT.STONE	LITH	MOTTLES	STRUCTURE	CONSIST	SUBSTRUCTURE	CALC
0- 32	FSL	10YR42 00	0	1	HR					
32- 60	C	25Y 52 00	0	0		M	MDCOPR	FM	P	

Wetness Grade : 3A
Wetness Class : IV
Gleying :032 cm
SPL :032 cm

Drought Grade :
APW : mm MBW : 0 mm
APP : mm MBP : 0 mm

FINAL ALC GRADE : 3A
MAIN LIMITATION : Wetness

SAMPLE NO.	GRID REF	USE	ASPECT	GRDNT	GLEY	SPL	--WETNESS-- CLASS	GRADE	-WHEAT- AP	MB	-POTS- AP	MB	M.REL DRT	FLOOD	EROSN EXP	FROST DIST	CHEM LIMIT	ALC	COMMENTS
1	SU79405350	CER			050	070	2	1	158	49	113	10	1				TX	2	
1P	SU79705330	CER			033		1	1	157	48	112	9	2				DR	2	ALSO TX
2	SU79505350	CER	N	02			1	1	165	56	111	8	2				DR	2	ALSO TX
2P	SU79605300	CER			032	032	4	3A		0		0					WE	3A	
3	SU79605350	CER	E	02	040		1	1	171	62	114	11	1				TX	2	
4	SU79405340	CER	W	04	030		1	1	180	71	125	22	1				TX	2	LFS TOP
5	SU79505340	CER	W	02	0	030	4	3B	144	35	104	1	2				WE	3B	MCL TOP
6	SU79605340	CER	E	03	030		1	1	170	61	115	12	1					1	FSL TOP
7	SU79705340	CER	E	03	093		1	1	176	67	115	12	1				TX	2	LFS TOP
8	SU79405330	CER	E	02	030	078	2	1	153	44	113	10	1				TX	2	
9	SU79505330	CER	W	05	048		1	1	167	58	114	11	1				TX	2	
10	SU79605330	CER	E	03	065		1	1	163	54	110	7	2				DR	2	ALSO TX
11	SU79705330	CER	E	01	030		1	1	160	51	112	9	2				DR	2	ALSO TX
12	SU79405320	CER			0		1	1	162	53	113	10	1					1	
13	SU79505320	CER	SW	02	070		1	1	169	60	114	11	1				TX	2	LFS TOP
14	SU79605320	CER	SE	03	050		1	1	166	57	114	11	1				TX	2	LFS TOP
15	SU79705320	CER			030		1	1	168	59	113	10	1				TX	2	LFS TOP
16	SU79505310	CER			060		1	1	144	35	116	13	1				TX	2	LFS TOP
17	SU79605310	CER			050		1	1	175	66	117	14	1					1	FSL TOP
18	SU79705310	CER	S	01	080		1	1	164	55	116	13	1				TX	2	
19	SU79605300	CER			035	035	4	3A	92	-17	101	-2	3A				WE	3A	
20	SU79705300	PGR			0	060	3	3A	146	37	117	14	1				WE	3A	GWATER

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	PED GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
1	0-30	lfs	10YR32 00						0	0	HR	1							
	30-42	lfs	10YR41 42	10YR56 00	F				0	0		0		G					Border FS
	42-50	lfs	10YR52 00	10YR56 00	F				0	0		0		G					Border FS
	50-70	lfs	10YR52 00	10YR58 00	C			Y	0	0	HR	2		G					
	70-100	sc	05 Y63 00	75YR68 00	M			Y	0	0	HR	2		P		Y			
	100-120	scl	05 Y63 00	75YR68 00	M			Y	0	0	HR	2		M					
1P	0-33	lfs	10YR32 00						0	0	HR	2							PSD = LFS
	33-54	lfs	10YR52 00	10YR46 56	C			Y	0	0	HR	2	MVCOAB	FR G					PSD = LFS
	54-62	lfs	10YR62 00	10YR56 00	C			Y	0	0	HR	2	MDCOAB	VF G					Border FS
	62-100	fs	10YR62 00	10YR56 00	M			Y	0	0	HR	2	WKCOAB	VF M					Mottling around
	100-120	c	25Y 72 00	75YR68 00	M			Y	0	0		0		P		Y			root channels
2	0-30	lfs	10YR32 00						0	0	HR	1							Border FS (PSD)
	30-50	lfs	10YR33 00						0	0	HR	1		G					
	50-80	fs	10YR52 53						0	0		0		M					Border LFS
	80-120	fs	10YR72 00						0	0	HR	5		M					
2P	0-32	fsl	10YR42 00						0	0	HR	1							PSD = FSL
	32-60	c	25Y 52 00	75YR68 00	M		05Y 62 00	Y	0	0		0	MDCOPR	FM P	Y		Y		Breaks to COAB
3	0-32	lfs	10YR32 00						0	0	HR	1							
	32-40	lfs	10YR42 52						0	0	HR	1		G					
	40-85	lfs	10YR53 00	10YR58 00	C			Y	0	0		0		G					
	85-120	fs	25 Y66 00	10YR78 00	C		25 Y62 00	Y	0	0		0		M					
4	0-30	lfs	10YR32 00						0	0	HR	1							
	30-45	fsl	10YR42 00	000C00 00	C			Y	0	0	HR	1		M					
	45-70	fsl	10YR52 00						0	0		0		M					
	70-115	fsl	25Y 03 00	000C00 00	F			Y	0	0		0		M					
	115-120	lfs	10YR52 00					Y	0	0		0		G					
5	0-20	mcl	10YR42 00	000C00 00	C			Y	0	0	HR	1							
	20-30	fsl	10YR42 00	000C00 00	C			Y	0	0	HR	1		M					
	30-60	hcl	25Y 63 00	000C00 00	M		00MN00 00	Y	0	0		0		P	Y		Y		
	60-80	scl	25Y 63 00	000C00 00	M			Y	0	0		0		M					
	80-120	scl	05Y 63 00	000C00 00	M			Y	0	0		0		M					
6	0-30	fsl	10YR32 00						0	0	HR	1							
	30-50	hcl	10YR53 00	000C00 00	C			Y	0	0	HR	1		M					
	50-70	scl	25Y 63 00	000C00 00	C			Y	0	0		0		M					
	70-120	lfs	25Y 64 00	000C00 00	M			Y	0	0		0		G					
7	0-35	lfs	10YR32 00						0	0	HR	1							
	35-60	lfs	10YR42 00						0	0	HR	1		G					
	60-93	lfs	10YR43 00						0	0		0		G					
	93-120	fsl	10YR53 00	000C00 00	C			Y	0	0		0		M					

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
8	0-30	1fs	10YR32 00						0	0	HR	1							
	30-38	1fs	10YR41 00	10YR44 00	C			Y	0	0		0		G					
	38-78	1fs	10YR52 53	10YR56 00	C			Y	0	0		0		G					Border FS
	78-90	scl	25 Y72 00	75YR68 00	M		25 Y71 00	Y	0	0		0		M		Y			
	90-120	c	25 Y72 00	75YR68 00	M			Y	0	0		0		P		Y			
9	0-30	1fs	10YR32 00						0	0	HR	2							
	30-48	1fs	10YR43 53						0	0	HR	2		G					
	48-55	fsl	10YR53 00	10YR56 00	C			Y	0	0	HR	2		M					
	55-70	scl	25 Y63 00	75YR68 00	M			Y	0	0		0		M					
	70-100	1fs	25 Y64 00	10YR58 00	M			Y	0	0		0		G					
	100-120	fs	25 Y64 00	10YR58 00	M			Y	0	0		0		M					
10	0-30	1fs	10YR42 00						0	0	HR	3							
	30-40	1fs	10YR53 64						0	0	HR	2		G					Border FS
	40-65	fs	10YR63 64						0	0		0		M					
	65-70	scl	10YR62 63	75YR58 00	C			Y	0	0		0		M					
	70-80	c	10YR62 00	75YR58 00	C			Y	0	0		0		M					
	80-105	1fs	25 Y73 00	10YR58 00	M			Y	0	0		0		G					
	105-120	fs	25 Y73 00	10YR58 00	M			Y	0	0		0		M					
11	0-30	1fs	10YR32 00						0	0	HR	1							
	30-50	1fs	10YR52 00	10YR46 00	C			Y	0	0	HR	2		G					
	50-65	1fs	10YR63 00	10YR58 00	C			Y	0	0		0		G					Border FS
	65-100	fs	10YR63 72	10YR44 00	C			Y	0	0		0		M					
	100-120	c	25 Y72 00	75YR68 00	M			Y	0	0		0		P					
12	0-30	fsl	10YR32 00	000C00 00	C			Y	0	0	HR	1							
	30-60	1fs	10YR32 00					Y	0	0		0		G					
	60-80	1fs	25Y 63 00	000C00 00	M			Y	0	0		0		G					
	80-120	scl	25Y 63 00	000C00 00	M			Y	0	0		0		M					
13	0-35	1fs	10YR32 00						0	0	HR	1							
	35-60	1fs	10YR43 00						0	0	HR	2		G					
	60-70	1fs	10YR54 00						0	0		0		G					
	70-90	sc	10YR53 00	000C00 00	C			Y	0	0		0		M					
	90-120	fsl	25Y 63 00	000C00 00	M			Y	0	0		0		M					
14	0-32	1fs	10YR32 00						0	0	HR	1							
	32-50	1fs	10YR43 00						0	0	HR	2		G					
	50-80	scl	10YR53 00	000C00 00	M			Y	0	0		0		M					
	80-120	1fs	25Y 63 00	000C00 00	M			Y	0	0		0		G					
15	0-30	1fs	10YR21 00						0	0	HR	1							
	30-40	1fs	10YR32 00	000C00 00	C			Y	0	0		0		G					
	40-70	scl	25Y 63 00	000C00 00	M			Y	0	0		0		M					
	70-120	1fs	25Y 63 00	000C00 00	M			Y	0	0		0		M					

SAMPLE	DEPTH	TEXTURE	COLOUR	MOTTLES COL	MOTTLES ABUN	MOTTLES CONT	PED COL.	GLEY	STONES >2	STONES >6	STONES LITH	STONES TOT	STRUCT/ CONSIST	SUBS STR	SUBS POR	SUBS IMP	SUBS SPL	SUBS CALC	
16	0-40	1fs	10YR32 00						0	0	HR	1							
	40-60	1fs	10YR52 00						0	0		0		G					
	60-90	scl	25Y 63 00	000C00	00	M		Y	0	0		0		M					
	90-120	lms	25Y 63 00	000C00	00	C		Y	0	0		0		M					
17	0-32	fsl	10YR32 00						0	0	HR	1							
	32-50	1fs	10YR32 00						0	0	HR	1		G					
	50-60	1fs	10YR42 00	000C00	00	M		Y	0	0		0		G					
	60-80	fsl	10YR53 00	000C00	00	M		Y	0	0		0		M					
	80-90	1fs	10YR53 00	000C00	00	M		Y	0	0		0		G					
	90-120	fsl	25Y 63 00	000C00	00	M		Y	0	0		0		M					
18	0-32	1fs	10YR31 00						0	0		0							
	32-65	1fs	10YR32 00	75YR46	00	F			0	0		0		G					
	65-80	fsl	10YR52 00						0	0		0		M					Few C lenses
	80-90	fsl	10YR53 00	10YR58	00	C		Y	0	0		0		M					
	90-105	scl	10YR53 63	75YR58	00	M		Y	0	0		0		M					
	105-120	c	10YR53 63	75YR58	00	M		Y	0	0		0		P					+ sand lenses
19	0-35	fsl	10YR42 00						0	0	HR	1							
	35-65	c	25Y 62 00	000C00	00	M		Y	0	0		0		P	Y		Y		PSD = SCL
20	0-30	mcl	10YR42 00	75YR46	00	C		Y	0	0		0							Border FSL
	30-60	mcl	10YR41 00	75YR56	00	C		Y	0	0		0		M					Watertable at 35
	60-70	scl	10YR41 00	75YR56	00	C		Y	0	0		0		P			Y		Saturated
	70-120	c	05 Y62 00	10YR46	00	M		Y	0	0		0		P			Y		+ FS